NIAGARA RIVER TOXICS MANAGEMENT PLAN (NRTMP) ANNUAL WORK PLAN [2000]

The "Four Parties"

EPA = U.S. Environmental Protection Agency
DEC = New York State Department of Environmental Conservation

EC = Environment Canada

MOE = Ontario Ministry of the Environment

	ACTIVITY	E P A	DEC	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
I.	Controlling Point Sources								
Α.	Report on U.S. Point Sources		*			Periodically		Periodically	See Note A
В.	Report on Canadian Point Sources (1994/95)				*		Completed Nov 96 See <i>Note B</i>		
II.	Controlling Non-Point Sources								
A.	Waste sites/landfills								
1.	Update progress report on remediation of U.S. hazardous waste sites. [Progress at most significant sites summarized below.]	*	*			Oct 99	Completed Oct 99	Oct 00	See "Public Involvement" section (V.B).
2.	Remediate Occidental Chemical-Buffalo Ave site								
a.	Complete overburden groundwater collection system.		*				Completed Dec 98		See <i>Note C</i>
b.	Enhance bedrock groundwater collection system.		*				Completed Dec 98		See <i>Note C</i>
С.	Complete remediation of contaminated soils and offsite groundwater		*				>		See Note C
d.	Issue Corrective Measures Implementation (CMI) Permit		*			Apr 99	Completed. Draft permit issued Sep 99.		See <i>Note C</i>
e.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.

	ACTIVITY	E P A	DEC	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
3.	Remediate Niagara County Refuse Disposal								
a.	Complete construction of site remedy.	*				Sep 00	On schedule	Sep 00	Installation of the leachate collection system and its tie-in to the municipal sanitary sewer system has been completed and the system is operational. Construction of the landfill cap is 95% complete.
4.	Remediate DuPont, Necco Park site								
а.	Start construction of final site remedy	*				Dec 99	Delayed>	Jun 00	The completion date will allow time to address any complications that may
C.	Complete final remedy	*				Sep 01	Delayed>	Mar 03	arise in achieving effective hydraulic containment in the fractured bedrock beneath the site, and to allow the remedial systems to be tested and optimized.
5.	Remediate Hyde Park Site								
а.	Complete construction of additional remedial systems (includes installing 3 additional pumping wells and force main, and additional measures as necessary).					Sep 99	Completed Dec 99		See <i>Note D</i>
b.	Optimize well pumping rates and evaluate the containment of contaminated groundwater. Monitor groundwater level and conduct chemical sampling	*				On-going		On-going	
С.	Complete all remedial systems.	*				Sep 00	Delayed>	Dec 00	

	ACTIVITY	E P A	D E C	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
d.	Conduct annual survey of gorge-face seeps.	*				Jul 99	Completed	Jul 00	See <i>Note D</i>
e.	Sample groundwater seeps coming from Niagara River Gorge face and analyze for toxic chemicals.	*				Dec 98	Completed. Sampling conducted annually since 1997. Results indicate no need for additional control or remediation of	Dec 00	Results of 2000 sampling. See <i>Note D</i>
f. g.	Assess contamination at Bloody Run Creek mouth Biomonitor effectiveness of remediation using caged mussels	*			*	 June 1999	the seep areas. Completed report issued in September 1999.	2000 2000	See Note D Next field survey.
6.	Remediate 102 nd Street								
а.	Complete containment system, including barrier wall, drainage system, landfill cap.	*					Completed		
b.	Complete leachate pumping system.	*					Completed Dec 98		Eliminates potential off-site loadings
С.	Complete site landscaping and optimization of the pump-and-treat system.	*				Jul 99	Completed Mar 99		
d.	Monitor groundwater level and conduct chemical sampling.	*				On-going		On-going	To ensure effectiveness of remedial systems.
e.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.

	ACTIVITY	E P A	D E C	E C	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
7.	Remediate Occidental Chemical, S-Area site								
а.	Finish building new City of Niagara Falls Drinking Water Treatment Plant (DWTP)	*					Completed Mar 97		
b.	Demolish existing City of Niagara Falls DWTP.	*					Completed winter 98		
С.	Construct eastern barrier wall	*				Jul 98	Completed May 98		Other three sides of site already enclosed by barrier walls.
d.	Complete cap and overburden drain collection system for the old DWTP property.	*				Dec 98	Completed Sep 99		See <i>Note E</i>
е.	Grout DWTP raw water intake.	*				2000		July 00	
f.	Install final landfill cap.	*				2000		Dec 00	See <i>Note E</i>
g.	Optimize well pumping rates and make sure that contaminated groundwater is no longer flowing off site.	*				2000	Delayed>	Apr 01	See <i>Note E</i>
h.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.

	ACTIVITY	E P A	D E C	E	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
8.	Remediate Solvent Chemical site								
a.	Complete remedial design		*			Sep 99	Completed		
b.	Construct site remedy		*			On-going	Construction began early 1998		Construction of the groundwater remedial systems began in 1999 and will continue throughout 2000. Pump tests on installed portions of the groundwater systems will allow design of the groundwater pretreatment system to be completed by mid-2000. Final cover is anticipated to be installed by fall 2000, and the pretreatment system is scheduled to go on-line in Jan 2001.
C.	Complete remedial action	*				Sep 00	Delayed>	Jan 01	
9.	Remediate Olin plant site								Demodfol or allow
а.	Monitor effectiveness of remedial systems.	*	*			On-going		On-going	Remedial system completed Oct 97
b.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.

	ACTIVITY	E P A	D E C	E C	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
10.	Remediate Buffalo Color Corporation site								
a.	Complete site investigation		*			Mar 99	Completed Apr 99		See <i>Note F</i>
b.	Select site remedy		*			Aug 00	On schedule	Aug 00	See <i>Note F</i>
С.	Implement site remedy.		*			Jul 01	On schedule	Jul 01	
11.	Finish implementing site remedy at Buffalo Color, Area D		*			Dec 98	Completed Sep 98		Remedy included removal of river sediments, cap, groundwater collection and treatment system, barrier wall.
a.	Complete wetland restoration		*			Sep 99	Completed		
b.	Site monitoring		*				On-going		
12.	Remediate Bethlehem Steel site								
a.	Complete site investigation	*	*			Apr 00	Delayed>	Apr 01	See <i>Note G</i>
b.	Select site remedy	*	*			Oct 01	Delayed>	Oct 02	
С.	Begin implementation of site remedy	*	*			Dec 02	Delayed>	Dec 03	
13.	Remediate River Road and Niagara Mohawk Cherry Farm sites								
а.	Complete construction of on-site remedy (includes capping the site with clean soil, and stabilizing the shoreline).		*			Sept 98	Completed		See <i>Note H</i>
b.	Remove contaminated sediment from Niagara River.		*			Nov 98	Completed		

	ACTIVITY	E P A	DEC	E	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
14	Remediate Gratwick Riverside Park site								See <i>Note J</i>
a.	Start construction of site remedy.		*			mid 99	Began Jun 99		
b.	Complete construction of site remedy		*			Dec 00	Delayed>	Apr 01	Final technical summary from the 1997 study completed Jun 99.
C.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.
15.	Remediate Occidental Chemical Durez - North Tonawanda Site								
а.	Complete construction of site remedy		*				Completed 1994. See <i>Note K</i> .		
b.	Assess contamination in Pettit Flume Cove		*						
С.	Biomonitor effectiveness of remediation using caged mussels				*	June 1999	Completed report issued in September 1999.	2000	Next field survey.
16.	Determine whether trace amounts of contaminants of concern found at 5 landfills are moving to groundwater off-site.			*	*		Completed. See <i>Note L</i>		
В.	Contaminated sediments	I.			•				
1.	Update NY Great Lakes Contaminated Sediments Inventory		*			Every 2 years	Data update completed Feb 99 and submitted to national database.	Annually	Inventory of data on contaminated sediments is used to prioritize sampling and remediation actions.

	ACTIVITY	E P A	D E C	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
III.	Monitoring								
А.	Complete report on results of Upstream/Downstream sampling	*	*	*	*	Dec 98 (for 96-97 report)	Final report completed and distributed.	Dec 00	97-98 report. (Revised Format)
В.	Collect juvenile spottail shiners or other juvenile fish and analyze for toxic chemicals, according to Monitoring Plan. See <i>Note M</i>		*		*	MOE: Dec 99 Dec 99	MOE: No spottail shiners collected in 1997. Collected emerald shiners at three locations instead. Collected spottail, common and emerald shiners at various locations in 1998. Spottail shiners were collected at 9 locations on the Niagara River in 1999.	MOE Dec 2000 Dec 00	Technical summary on 1999 collections. MOE to collect fish in 2000. Technical summary of 1999 collection.
						DEC: May 2000	DEC: Final report on 1996 collections completed May 2000.	DEC: May 2000	Draft report on 1997 collections. Collections to follow on a five-year basis (next in 2002)
C.	Track down toxic chemicals in tributaries and sewer systems to identify sources.	*	*			Dec 99	Assess existing information and plan for next step. See Note N.	Spring-Fall, 2000	Complete PCB trackdown in Two Mile Creek. See <i>Note N</i>
D.	Biomonitor using caged mussels and analyze for toxic chemicals, according to Monitoring Plan. See <i>Note O</i>				*	Every 3 years	Completed report issued in September 1999.	Every 3 years	Next field survey in 2000.

	ACTIVITY	E P A	D E C	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
E.	Study use of zebra and quagga mussels as biomonitors				*	Dec 98	>	Dec 00	Sampling and analysis completed. Abstract paper due in 2000.
F.	Assess sport fishery in Niagara River, with contaminant analysis.			*	*	MOE: Apr 99	Sport fish collected in Niagara River in 1997- 1998.	MOE: Apr 99 MOE Apr 00	"1999-2000 Guide to Eating Ontario Sport Fish" completed. Complete the review of sport fish contaminant trends in the Niagara
							Sport fish collected in Niagara River in 1999. Collect sport fish from the Niagara River in 2000.	Apr 01	River/Western Lake Ontario from 1970-2000. Release 2001-2002 "A Guide to Eating Ontario Sport Fish".
G.	Collect sample of Falls Street Tunnel wet weather discharge and analyze for NRTMP priority chemicals using techniques to achieve low detection levels.		*					Jun 00	Sample collected fall 1999. Analysis and report expected June 2000.
IV.	Define additional actions to reduce to	oxio	c ch	em	ical	inputs to the	Niagara River		
А.	Develop additional materials relating information on Niagara River contamination and contaminant sources, and incorporate into NRTMP Progress Report and Work Plan.	*	*	*	*	Beginning May 00	Materials included in 2000 report	May 01	See <i>Note P</i>

	ACTIVITY	E P A	DEC	EC	M O E	1999 Commitment	Status/Comments	2000 Commitment	Status/Comments
٧.	Public Involvement								
А.	Develop a reader-friendly brochure that gives an overview of the NRTMP and summarizes progress made on restoring the Niagara River.	*	*	*	*	Jun 99	Completed Feb 00		
B.	Present progress made in the remediation of U.S. hazardous waste sites at a public meeting in Niagara Falls.	*	*			Nov 99	Completed	Nov 00	See "Controlling Non- Point Sources" section (II.A.1).
C.	1. Make NRTMP information and reports available on the Internet.	*	*	*	*	As available	On-going. See Note Q	As available	
	2. Develop a NRTMP web page	*	*	*	*	Sep 99	Delayed>	Sep 00	NRTMP web page to be developed on EPA/GLNPO web site
D.	Produce a progress report on the condition of the Niagara River and NRTMP efforts to restore the river. Update annual work plan for future actions.	*	*	*	*	May 99 May 00	Completed.	May 01	Annually.
E.	Hold a public meeting to present above progress report and updated annual work plan.	*	*	*	*	Jun 99 Jun 00	Jun 99 completed; Jun 00 scheduled.	Jun 00 Jun 01	Annually.

WORK PLAN NOTES

Note A. Report on U.S. Point Sources

DEC regularly monitors a suite of EPA priority pollutants in point sources as part of its State Permit Discharge Elimination System (SPDES) requirements. Of the 29 most significant point sources of toxic pollutants existing in 1986, 26 dischargers are still operating. New York reported an 80% drop in priority pollutants from its 29 significant point sources between 1981 and 1985. New York also reported a drop of 25% in the remaining load of "priority pollutants" between 1985 and 1994.

Note B. Report on Canadian Point Sources

In November 1996, MOE released a final report on NRTMP-specific monitoring of its point sources on the Niagara River.

From 1986 to 1995, MOE has seen an estimated 99% reduction in loadings of the 18 chemicals of concern (COC).

Provincial Water Quality Objectives (PWQO) have been set for 14 of the 18 COCs. Since 1993, effluent quality from these point sources has met all 14 PWQOs. This means that end-of-pipe concentrations are acceptable against the Standards that Ontario has set for all surface waters in the Province. As a result, MOE has discontinued NRTMP-specific monitoring of the Niagara River and focused resources towards Ontario's biomonitoring program on the River.

Regulatory monitoring and reporting of Ontario point sources required by Certificates of Approval and Clean Water regulations will continue.

Note C. Remediate Occidental Chemical-Buffalo Ave Site

The groundwater stabilization programs were completed in December 1998. Occidental enhanced its treatment plant for contaminated bedrock groundwater, and then increased the groundwater extraction rates. The overburden groundwater collection system was augmented by installation of a tile drain collection system. On December 27, 1999 New York State issued a final permit that incorporates these and other corrective measures currently in place as part of the Final Corrective Measures for the site. The effective date of the permit is February 10, 2000.

Note D. Remediate Hyde Park Site

Most site construction is complete. All of the overburden groundwater is being contained, and in the three bedrock groundwater zones, at least 80% of contaminated groundwater is being contained. Remedial work to achieve full containment is continuing. A total of six additional pumping wells were installed in 1998 and 1999.

EPA has evaluated current groundwater contour maps and determined that hydraulic containment is not being achieved in the north-west corner of the site. The NAPL plume will be redefined in the north-west corner and additional groundwater pumping wells will be installed in the 2000 construction season. Drilling commenced 3/27/00.

Completion of construction is scheduled for September 2000, with Remedial Action completion by December 2000.

To ensure that remediation of the groundwater seeps in the Niagara River Gorge face has been effective, survey of the gorge face, and sampling of the seeps, is conducted annually. The survey is a physical inspection of the area, for example, to document whether any seepage is evident and ensure that physical barriers are sound. The seep sampling includes analysis of aqueous phase chemical contaminants. Results continue to indicate no need for additional control or remediation of the area.

Sediment sampling conducted by MOE in 1997 and EPA in 1999 at the mouth of Bloody Run Creek indicates possible continuing concerns due to dioxin contamination. EPA will assess the human health risk of the contamination. A more detailed characterization of the area will be performed.

Note E. Remediate Occidental Chemical S-Area Site

The installation of the final cap for the old Niagara Falls Drinking Water Treatment Plant property was completed in September 1999. Restoration work for portions of the cap that were disturbed for replacement of the drain collection system (DCS; see below), and around portions of the DWTP intake system will begin in spring 2000 and be completed in fall 2000. Part of the DCS for the landfill portion of the S-area site where the drain pipe collapsed is being replaced. Completion is expected in April 2000. The completion of the S-Area Remedial Action is expected in spring 2001. The DCS work is delaying the start of construction of the final landfill cap until spring 2000. Also, it is anticipated that modifications to the final bedrock pump and treat system will be needed. Installation of all systems for bedrock monitoring programs will be completed by early 2001.

Note F. Remediate Buffalo Color Corporation Site

The site RFI has been completed. A supplemental investigation was conducted during summer 1998. A revised RFI report was submitted in December 1998 and approved in April 1999. A Corrective Measures Work Plan was submitted in May 1999 and approved in July 1999. During July 1999, a pump test was performed to aid in the design of an Interim Corrective Measure for Plant Area A, to prevent the discharge of contaminated groundwater to the Buffalo River. Completion of the CMS Report is expected in May 2000.

Note G. Remediate Bethlehem Steel Site

BSC has completed the field work for the site investigation, and is preparing RFI and human health risk assessment reports. These have been delayed due to negotiations over the scope. Approval is anticipated by April 2001. BSC completed limited remedial technology studies for two areas that appear to be the primary sources of groundwater contamination at the facility (the Acid Tar Pits and Coke Oven Areas). EPA and DEC found the studies to be technically flawed and of limited value. BSC has submitted a Pre-design Investigation Report for the remediation of the Benzol Plant Area (i.e., coke oven area), which is currently under agency review. Any future CMS or CMI activities will require a new order, permit or other agreement.

Note H. Remediate River Road and Niagara Mohawk Cherry Farm Site

Sediment removal and final capping of the sediment disposal area was completed in July 1999. Recent diver inspection of the dredged areas shows good revegetation and recolonization by fish. The remedial action also included fish and wildlife habitat enhancements.

Note J. Remediate Gratwick Riverside Park Site

Remedial construction began in June 1999. The action involves a cap over the site, a slurry wall barrier between site and river, collection of contaminated groundwater, and shoreline stabilization with enhancements for improved habitat value.

Note K. Remediate Occidental Chemical Durez - North Tonawanda Site

The remediation of this site was completed in 1994. The remedial action included construction of a ground water interceptor trench around the plant perimeter to collect groundwater for treatment at an on-site carbon treatment system; removal of contaminated sediments in 22,000 linear feet of sewers off site; and remediation of Pettit Creek Cove, including sediment and soil removal at the cove, pumping of DNAPL; and dredging of the Little Niagara River.

Recent sampling of sediment in the Pettit Cove has confirmed the presence of dioxin and furans indicative of Occidental Chemical, Durez. However, due to the absence of volatile organic chemicals (VOCs) within the recently deposited sediment, it is hypothesized that the contamination is an historical remnant of past sewer cleaning operations within the Pettit Flume and not a new source. In response, Occidental Chemical has mobilized a remedial contractor to conduct maintenance dredging of the Pettit Cove. Approximately, 200 cubic yards of sediment will be hydraulically dredged out of the cove in spring 2000.

Note L. Determine whether trace amounts of contaminants of concern found at 5 landfills are moving to groundwater off-site

During the Niagara River Toxics Committee Study (1981-84), four industrial and one municipal landfills were identified as having the potential to contribute contaminants to the River. Studies conducted in 1991 and 1993 showed that the landfills have minimal to no impact on the River. Groundwater monitoring at these sites has shown that contaminants are not moving to the groundwater and off-site. Further assessment is not required at this time.

Regulatory monitoring and reporting of these non-point sources as required by certificates of approval will continue.

Note M. Collect juvenile spottail shiners or other juvenile fish and analyze for toxic chemicals, according to Monitoring Plan

In 1997 and 1998, spottail shiner capture in the Niagara River was poor despite efforts of MOE and DEC on the Canadian and U.S. sides of the River. MOE collected emerald shiners as an alternate species at three locations in 1997 including Queenston, Lewiston, and Niagara-on-the-Lake. Technical summaries are currently in preparation. MOE collected juvenile fish from nine locations on both the Canadian and U.S. side of the Niagara River in 1998. The Canadian locations included Fort Erie (spottail shiners), Queenston (common shiners), and Niagara-on-the-Lake (spottail shiners). The U.S. locations included Wheatfield (common shiners), 102nd Street (common shiners), Cayuga Creek (common and spottail shiners), Search and Rescue (emerald shiners) and Lewiston (emerald shiners). In 1997, DEC completed collections of spottail shiners and other young-of-the-year fish at 35 stations throughout the Great Lakes basin in New York State, including 14 stations in the Niagara River basin. Analysis was expanded to include PCB congeners and dioxin and furans at several stations. A report is in preparation.

Note N. Track down toxic chemicals in tributaries and sewer systems to identify sources

There is evidence of continuing sources of some of the NRTMP priority toxic chemicals in the Niagara River and its tributaries. Trackdown is a key program to identify the sources. DEC and EPA are working cooperatively to oversee the implementation of New York State Great Lakes basin source trackdown work, including Lake Ontario, the Niagara River and Lake Erie. DEC and EPA are currently implementing certain plans for trackdown in the Great Lakes waters including the Niagara River. Trackdown work is planned for Two-mile Creek for this year. Additional U.S. plans are being developed in consideration of the needs and available resources. Much relevant information has been collected over the past several years in the Niagara River and tributaries that is helping us determine priorities for further efforts to identify point and non-point sources impacting the river. To develop these plans, the available information is currently under review and will be summarized in the 2001 and future NRTMP Progress Reports.

Note 0. Biomonitor using caged mussels and analyze for toxic chemicals, according to Monitoring Plan

Since 1981, MOE, with the cooperation of DEC, has conducted routine and specialized biomonitoring of contaminants in the Niagara River using caged mussels. Studies have been conducted on both the Canadian and U.S. sides of the River. These studies have provided information on suspected contaminant sources and source areas, as well as information on the effectiveness of site remediation in reducing contaminants in the River between Fort Erie and Niagara-on-the-Lake.

In 1997, two complementary studies were initiated by the MOE (a) the routine deployment of caged mussels at 32 stations on the Canadian and American sides of the river for 21 days of exposure, and (b) a long term deployment of mussels up to four months at four stations. Mussels were retrieved after the designated period of deployment and the tissues were analysed for organochlorine pesticides, total chlorinated benzenes. polychlorinated biphenyls (PCBs), polycyclic hydrocarbons (PAH) and polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF). The report, Niagara River Mussel Biomonitoring Program, 1997, was released in September 1999 and is available through the Ministry of the Environment. During the summer of 2000, mussels will be deployed at 34 sites in the Niagara River.

Note P. Develop additional materials relating information on Niagara River contamination and contaminant sources.

The goal of the December 1996 NRTMP Letter of Support is

To reduce toxic chemical concentrations in the Niagara River by reducing inputs from sources along the river. The purpose is to achieve ambient water quality that will protect human health, aquatic life, and wildlife, and while doing so, improve and protect water quality in Lake Ontario as well.

Though NRTMP has made much progress toward this goal, more work is needed to determine what additional actions are necessary to improve water quality and reduce contamination of sediments, fish and wildlife. The task is to examine a variety of information sources on toxic contamination in the River water, biota, and sediments, toward the following objectives:

- Develop an improved description of contaminant status and trends in the Niagara River, and the relationship to the NRTMP;
- Determine the toxic chemicals that continue to exceed criteria or standards for the protection of human health, aquatic life, and wildlife in the Niagara River;
- Determine and describe the sources and loads of those chemicals;
- Where the above objectives cannot be fully achieved, describe the actions necessary to achieve them.

Key sources of information for the synthesis include: (1) Upstream/Downstream monitoring; (2) contaminant biomonitoring; (2) sportfish advisories and contamination; (5) contaminant source trackdown monitoring; (5) sediment quality data; (6) waste site contaminant loadings; (7) point source contaminant loadings. The effort to develop the synthesis is underway. Some information is incorporated into the NRTMP 2000 Progress Report and Work Plan (e.g., fish advisory information, data comparison to water quality criteria). Additional information is currently under review (eg., contaminant trackdown in U.S. tributaries, point sources). This effort will continue in 2001.

Note Q. Make NRTMP information and reports available on the Internet

The Four Party Upstream/Downstream Reports for 1991/92, 1993/94, 1995/96, and 1996 /97 can be found on the GLIMR web site at http://www.cciw.ca/glimr/search.html (search "joint evaluation"). The November 1998 and October 1999 U.S. waste site remediation reports are at http://www.epa.gov/grtlakes/lakeont/nrtmp. Additional reports will be added as they become available.